

## ABSTRACT

An electrodeposition process for producing a layered composite material and the layered composite material produced by the process. The layered composite material includes at least one layer of a first alloy species of an alloy and at least one layer of a second alloy species of the alloy. The first alloy species and the second alloy species have distinguishable properties. The process includes the steps of first energizing an electroplating circuit to provide a first electroplating current to deposit a layer of the first alloy species and second energizing the electroplating circuit to provide a second electroplating current to deposit a layer of the second alloy species. The alloy is preferably a gold-tin alloy, the first alloy species is preferably the  $\text{Au}_5\text{Sn}$  alloy phase and the second alloy species is preferably the  $\text{AuSn}$  alloy phase.

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